

**Amendments to the Claims**

The following listing of claims replaces all prior versions, and listings, of claims in this application.

- 1        1.        (Original) An apparatus for use in a system for supercritical processing of an object with  
2                a fluid, comprising:  
3                        means for injecting a processing chemistry into the system, including means for  
4                starting and means for stopping the means for injecting; and  
5                        means for substantially preventing fluid from re-entering the means for injecting.
  
- 1        2.        (Original) The apparatus of claim 1 wherein the means for injecting comprises means for  
2                injecting at a predetermined pressure.
  
- 1        3.        (Original) The apparatus of claim 2 wherein the predetermined pressure is in a range of  
2                approximately 2300 psi to approximately 3000 psi.
  
- 1        4.        (Original) The apparatus of claim 2 wherein the means for injecting further comprises at  
2                least one of a pump, a first backflow-prevention means for substantially preventing  
3                backflow of the processing chemistry, and a second backflow-prevention means for  
4                substantially preventing backflow of the processing chemistry.
  
- 1        5.        (Original) The apparatus of claim 4 wherein at least one of the first backflow-prevention  
2                means and the second backflow-prevention means comprises at least one check valve.
  
- 1        6.        (Original) The apparatus of claim 1 wherein at least one of the means for starting and the  
2                means for stopping comprises a flow-control means.
  
- 1        7.        (Original) The apparatus of claim 6 wherein the flow-control means comprises at least  
2                one of a valve, a pneumatic actuator, an electric actuator, a hydraulic actuator, and a  
3                micro-electric actuator.
  
- 1        8.        (Original) The apparatus of claim 1 wherein the means for substantially preventing fluid  
2                from re-entering the means for injecting is operative when at least one of the means for  
3                stopping is active and the means for starting is active.

- 1     9.     (Original) The apparatus of claim 8 wherein the means for substantially preventing fluid  
2           from re-entering the means for injecting comprises a back-pressure regulator.
- 1     10.    (Original) The apparatus of claim 1 wherein the object is a semiconductor wafer for  
2           forming integrated circuits.
- 1     11.    (Original) The apparatus of claim 1 further comprising a fluid source in fluid flow  
2           communication with the means for injecting.
- 1     12.    (Original) The apparatus of claim 1 further comprising a fluid supply means for supplying  
2           the processing chemistry to the means for injecting.
- 1     13.    (Original) The apparatus of claim 12 wherein the processing chemistry is at least one of  
2           gaseous, liquid, supercritical and near-supercritical carbon dioxide.
- 1     14.    (Original) The apparatus of claim 13 wherein at least one of solvents, co-solvents and  
2           surfactants are contained in the carbon dioxide.
- 1     15.    (Original) The apparatus of claim 12 wherein the fluid supply means comprises at least  
2           one of a fluid mixer, a first fluid source, a valve for controlling a flow of a first fluid from  
3           the first fluid source, a second fluid source, and a valve for controlling a flow of a second  
4           fluid from the second fluid source.
- 1     16.    (Original) A system for supercritical processing of an object with a fluid, comprising:  
2           a high-pressure process chamber;  
3           means for injecting a processing chemistry into the high-pressure process chamber  
4           including means for starting and means for stopping the means for injecting; and  
5           means for substantially preventing fluid from re-entering the means for injecting.
- 1     17.    (Original) The system of claim 16 wherein the means for injecting comprises means for  
2           injecting at a predetermined pressure.
- 1     18.    (Original) The system of claim 17 wherein the predetermined pressure is in a range of  
2           approximately 2300 psi to approximately 3000 psi.

- 1 19. (Original) The system of claim 16 wherein the means for injecting includes at least one of  
2 a pump, a first backflow-prevention means for substantially preventing backflow of the  
3 processing chemistry, and a second backflow-prevention means for substantially  
4 preventing backflow of the processing chemistry.
- 1 20. (Original) The system of claim 19 wherein at least one of the first backflow-prevention  
2 means and the second backflow-prevention means comprises at least one check valve.
- 1 21. (Original) The system of claim 16 wherein at least one of the means for starting and  
2 means for stopping comprises a flow-control means.
- 1 22. (Original) The system of claim 21 wherein the flow-control means comprises at least one  
2 of a valve, a pneumatic actuator, an electric actuator, a hydraulic actuator, and a micro-  
3 electric actuator.
- 1 23. (Original) The system of claim 16 wherein the means for substantially preventing fluid  
2 from re-entering the means for injecting is operative when at least one of the means for  
3 stopping is active and the means for starting is active.
- 1 24. (Original) The system of claim 23 wherein the means for substantially preventing fluid  
2 from re-entering the means for injecting comprises a back-pressure regulator.
- 1 25. (Original) The system of claim 16 further comprising means for circulating a fluid,  
2 wherein the means for circulating a fluid is coupled to the high-pressure process chamber.
- 1 26. (Original) The system of claim 16 further comprising a process control computer coupled  
2 for controlling at least one of a valve, a pneumatic actuator, an electric actuator, a  
3 hydraulic actuator, a micro-electric actuator, a pump, and a back-pressure regulator.
- 1 27. (Original) The system of claim 16 wherein the object is a semiconductor wafer for  
2 forming integrated circuits.
- 1 28. (Original) The system of claim 16 wherein the processing chemistry is at least one of  
2 gaseous, liquid, supercritical and near-supercritical carbon dioxide.

1     29.     (Original) The system of claim 28 wherein at least one of solvents, co-solvents and  
2             surfactants are contained in the carbon dioxide.

1     30.     (Original) A supercritical processing system for processing a semiconductor wafer with a  
2             fluid, the fluid being from a fluid source, the system comprising:

- 3         a.       a circulation loop coupled to a high-pressure processing chamber; and
- 4         b.       an inlet line for introducing the fluid into the circulation loop, the inlet line  
5             including:
  - 6               i.       an inlet port in the circulation loop;
  - 7               ii.      a back-pressure regulator coupled to the inlet port;
  - 8               iii.     a pump for compressing the fluid to form a pressurized fluid;
  - 9               iv.     a first line for transferring the pressurized fluid from the pump to the back-  
10                    pressure regulator, the first line configured to maintain a uni-directional  
11                    flow of the pressurized fluid from the pump towards the back-pressure  
12                    regulator; and
  - 13               v.     a second line for transferring a quantity of the fluid from the fluid source  
14                    to the pump, the second line configured to maintain a uni-directional flow  
15                    of the fluid from the fluid source to the pump.

1     31.     (Withdrawn) A method of regulating a flow of a processing chemistry into a system for  
2             supercritical processing of an object with a fluid, comprising the steps of:

- 3         a.       supplying the processing chemistry to a pump for compressing the processing  
4             chemistry to form a pressurized fluid;
- 5         b.       providing a start-stop system for controlling an inlet line for introducing the  
6             processing chemistry into the system, such that when a start mode is active the  
7             pressurized fluid is introduced into the system, and such that when a stop mode is  
8             active the pressurized fluid is not introduced into the system;
- 9         c.       maintaining a flow of the pressurized fluid when the start mode is active; and
- 10        d.       preventing a fluid within the system from entering the inlet line while at least one  
11             of the start mode and the stop mode is active.

1     32.     (Withdrawn) The method of claim 31 wherein the step of maintaining a flow of the  
2             pressurized fluid comprises operating the pump such that a predetermined quantity of the  
3             processing chemistry is introduced into the system.

- 1 33. (Withdrawn) The method of claim 32 wherein the predetermined quantity of the  
2 processing chemistry is introduced into the system at a predetermined pressure.
- 1 34. (Withdrawn) The method of claim 33 wherein the predetermined pressure is in a range of  
2 approximately 2300 psi to approximately 3000 psi.
- 1 35. (Withdrawn) The method of claim 31 wherein the step of preventing a fluid within the  
2 system from entering the inlet line comprises providing a back-pressure regulator.
- 1 36. (Withdrawn) The method of claim 31 wherein the object is a semiconductor wafer for  
2 forming integrated circuits.
- 1 37. (Withdrawn) The method claim 31 wherein the processing chemistry is at least one of  
2 gaseous, liquid, supercritical and near-supercritical carbon dioxide.
- 1 38. (Withdrawn) The method claim 33 wherein at least one of solvents, co-solvents and  
2 surfactants are contained in the carbon dioxide.
- 1 39. (Withdrawn) The method claim 31 further comprising performing at least one of a  
2 supercritical cleaning process and a supercritical rinsing process.